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ABSTRACTS
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(Pages refer to the Japanese originals of this volume unless otherwise noted.)

Enthymatic Studies on Exuvial Fluid of *Bombyx Mori* L (Silkworm). (Part III.)

Microscopical Observations on Enzymatic Action at Moulting.

(pp. 521～523)

By Yasuji HAMAMURA and Syûsiro ITO,

(Kyoto Sericultural College; Received March 3, 1942.)

One of the authors (H)(1)(2) found enzymes, especially chitinase and protease, in the exuvial fluid of silkworm and at the same time glucosamin and amino acid in water extraction of the exuvia.

Now the authors succeeded in proving by microscopical observation of sections made of several stages of the sleeping period of silkworm, that enzymatic digestion takes place of the old skin of silkworm at moulting.

(1) HAMAMURA, IIDA, and OTUKA: Bull. Agr. Chem. Soc. Jap., **16**, 905 (1940).
(2) HAMAMURA, KANEHARA: Bull. Agr. Chem. Soc. Jap., **16**, 907 (1940).

Chemische Bestandteile des Tees. II. Mitteilung.

Theosterin und β-Amyrin.

(SS. 524～526)

Von Yaziro SAKATO.

(Aus d. Institut für Tee Kioto, Eingegangen am 11. 3. 1942.)

On the Alkaline Decomposition of Codeinone Methiodide and of 1-Bromo-sinomeneine Methiodide.

(pp. 527～530)

By Kakuje GOTO.

(Kitasato Institute; Received March 20, 1942.)

Untersuchungen über die Beziehungen von Bataten zur Alkoholproduktion. (IV).

(SS. 531～534)

Von Y. TAKEDA, K. SUEMATU, und M. UTIKOSI.

(The Institute of Research on Chemical Industry, Government-General of Taiwan, Japan; Received February 9, 1942.)

Chemical Studies on Agricultural Insecticides.

(pp. 535～542)

(Part 3.) On the Component Systems of Kerosene Miscible Oil Emulsions Containing Soap as Emulsifier.

By Chiyoka MOURI and Hiroshi NORIMATSU.

(Central Laboratory, South Manchuria Railway Company, Dairen; Received March 3, 1942.)

As the fundamental studies on the preparation of kerosene miscible oil containing soap as emulsifier, the authors have studied the four-component systems, consisting of kerosene (b. p. 150～200°C), potassium stearate, water and such mutual solvents as *p*-cresol, amyl alcohol, benzyl alcohol and cyclohexanol, by the measurement of transition points from the heterogeneous to the homogeneous system. The quantity of the mutual solvent necessary to prepare a homogeneous system decreases rapidly to the minimum point and then increases gradually with increasing amounts of water.

(Part 4.) On the Stability to Hard of Kerosene Miscible Oil Emulsions Containing Soap as Emulsifier.

The authors have studied the stability to hard water of kerosene miscible oil emulsions containing soap as emulsifier and compared with that of the kerosene soap emulsions mentioned in the previous report (part 2), and the following results have been obtained.

1. The relation between the concentrations of kerosene in kerosene miscible oil emulsions and their dispersion condition in the hard water of 70° (in German degrees) have been found to be similar to that in the case of kerosene soap emulsions. When the content of kerosene is too low, solid deposits are formed; while when its content is too high, oily substances are separated out. The most suitable concentration of kerosene is found to be 1.00～1.50 % when the concentration of soap (potassium stearate) is 0.25 %.

2. The stability to hard water of kerosene miscible oil emulsions of various kerosene contents has been tested. At the hardness above 30°, solid or oily substances are separated out, but the latter is formed at the kerosene contents of 2.50 %; at the hardness under 30° creamings are formed when its contents are above 1.00 %.

3. Among the mutual solvents tested such as *p*-cresol, cyclohexanol, phenol, benzyl alcohol and amyl alcohol, cyclohexanol and amyl alcohol are superior to the others in promoting the stability to hard water of emulsions.

Studies on the Yeasts Found in "Miso."

(pp. 543～554)

By Masatoshi Mogi.

(The Brewing Laboratory, Noda Syôyû Co., Ltd., Tiba-ken;
Received February 16. 1942.)

Researches on Ground Wood Pulp. (Part VIII).

Effect of Grinding Temperature.

(pp. 555～563)

By Yoshitsugu Kimura.

(Kyōto Imperial University;
Received February 16, 1942.)

On some Substitutes of Rochelle-salt in Fehling's Solution.

(pp. 564～566)

By Masakazu Yamada and Itiro Tamai.

(Government Institute of Brewing, Tokyo;
Received March 2, 1942.)

1. The property of dissolving cupric hydrate was tested in strong alkaline solution.

Positive: tartaric acid, citric acid, glyceric acid, gluconic acid, lactic acid, mannit, glycerin, 2,3-butylene-glycol and ethylene glycol.

Negative: acetic acid, succinic acid, adipic acid, malic acid, and ethyl alcohol.

2. The property may be related to the presence of two or more OH groups with the exceptions of lactic and citric acids.

3. As the substitute of Rochelle salt (173 g) in 1 *l* of Fehling's solution, 70 cc of glycerin, 60 g of mannit, 80 g of tartaric acid with 50 g of NaOH, 40 cc of glyceric acid with 50 g of NaOH, 175 cc of lactic acid (75 %) with 100 g of NaOH and 300 cc of ethylene glycol can be used.

Gluconic acid or 2,3-butylene glycol is not suitable for this purpose because they may produce some decomposition products of reducing property in heating.

4. 200 cc of glycerin, 100 g of mannit, 200 cc of ethylene-glycol and 60 g of tartatic acid can also be used as the substitute for Rochelle salt (50 g) in 1 *l* of Nylander's reagent.

Researches on Bamboo in Taiwan as a Raw Material for Pulp. (Part VII.)

On the Two Step Cooking of "Keitiku."

(pp. 567～571)

By Minoru TUTIYA and Yoshiteru KATO.

(Industrial Research Institute of Taiwan; Received February 27, 1942.)

Bamboo (or Gramineae) contains, as a non-cellulose substance, a larger quantity of pentosan, than that of Coniferae, i. e., "Keitiku" contains about 24%. The pulp obtained by single cooking in Mg-sulphite solution contains about 10% pentosan in so called "α-cellulose" which amounts to more than 90%. This pulp is bleachable and good for paper-making, but is not suitable for artificial silk pulp in the point of pentosan content. We attempted two step cooking for preparing of the artificial silk pulp. In the first step, using Ca-sulphite solution, we eliminated most of the pentosan in chip, and in the next step, by caustic soda solution, obtained the desired pulp. The yield in the first step was about 70%, containing about 10% pentosan, and the final product was about a quarter of the starting substance.

Our experiments led us to conclude as follows:—

1. The most reasonable method to obtain good pulp from bamboo (or Gramineae), which contains a large quantity of pentosan, is to expel most of the pentosan in the first cooking and then to obtain the wanted pulp at the second cooking.
2. Since the deduction ratio of pentosan is proportional to the concentration of acid, we can so regulate the treatment to reduce the quantity of pentosan as desired in pretreated substance.
3. The preferable conditions of the first cooking are at 150°C for 2 hrs., using Ca-sulphite solution far less than 1% total SO_2, then we can obtain a substance with the pentosan content like that of Coniferaes.
4. If we operate at ordinary pressure, sulfuric acid is more favourable than sulphite solution.

Dietary studis on the Increase of Utilizng Value of Northern Farm Animalls.

VI. On the Effect of Feeding with Hydrolyzed Products of Human Hair upon Sheen and Pregnancy of Fox.

(pp. 572～576)

By E. TAKAHASHI and K. SHIRAHAMA.

(Department of Agriculture, Hokkaido Imperial University; Received Jauuary 6, 1942.)

Studies on the Lactogenic Factor in Soy-beans.

VI. The Effect of the Isolated Crystal on Lactation in Rats.

(pp. 577～580)

By Yosaburo IWASA.

(Dept. of Food Chemistry, Osaka Municipal Hygenic Lab.; Received February 21, 1942.)

Dehalogenations of the Halogenated Sugar Alcohols. (Part IV.)

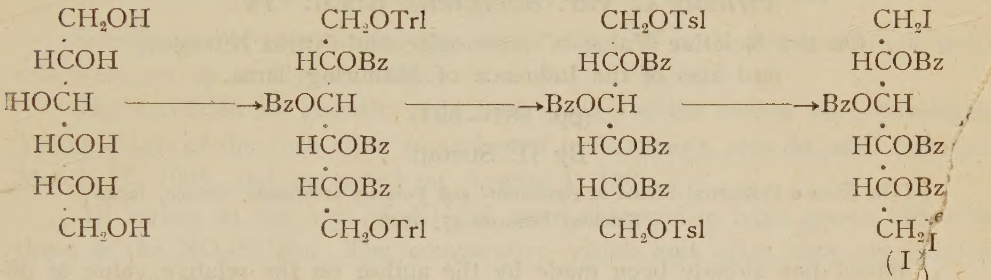
Dehalogenation of 1,6–Diiodotetrabenzoyl-sorbitol by Molecular Silver and Zinc with Acetic Acid.

(pp. 581~583)

By Yasuji HAMAMURA.

(Kyoto Sericultural College; Received March 2, 1942.)

1,6–Diiodotetrabenzoyl-sorbitol (I) was prepared as follows :—



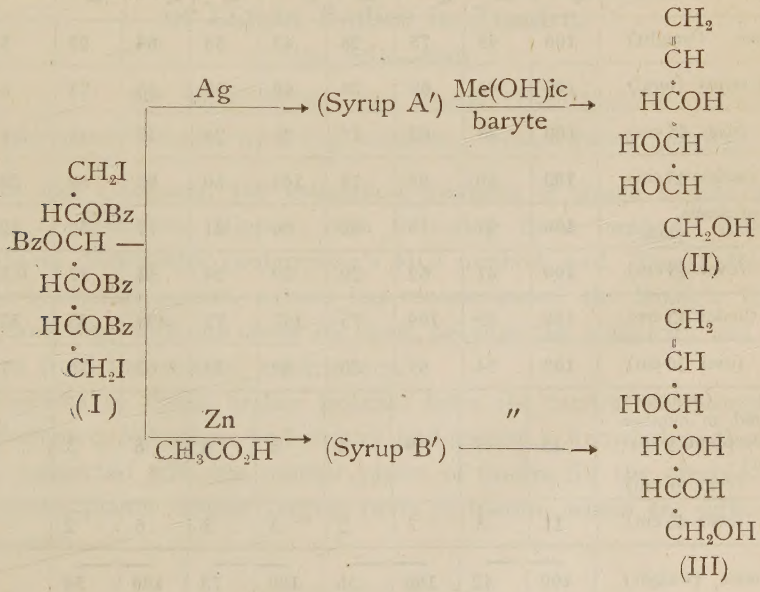
Sorbitol

1,6–Ditrityltetra-benzoyl-sorbitol m. p. 176°C $[\alpha]_D = +43.18°$

1,6–Ditosyltetra-benzoyl-sorbitol m. p. 124~5°C $[\alpha]_D = 13.0$

1,6–Diiodotetra-benzoyl-sorbitol m. p. 70~72°C $[\alpha]_D = 40.66$

By dehalogenating this substance (I), by molecular Ag and Zn with CH_3COOH respectively, and afterwards hydrolysing the halogenation products in the same way as in the formerly reported case of mannitol, the author has obtained *l*-3,4,5,6–tetrahydroxymannohexene (1 : 2) (II) and its optical antipode (III) in the same way. The yield, however, was much smaller in comparison with the corresponding cases of mannitol :—



On the Production of 2,3-Butylene Glycoll and Ethyl-alcohol from Pentose by Fermentation.

(pp. 584~586)

By Jiro YANAI.

(Agricultural Chemical Laboratory, Tokyo Imperial University; Received March 6, 1942.)

Studies on the Value of Chemicals for *Juncus effusus* L. var. *decipiens* BUCH. IV.

On the Relative Value of Ammoniac and Nitric Nitrogen, and also of the Influence of Manuring Time.

(pp. 587~594)

By H. SUTOH.

(The Simane Prefectural School of Agriculture and Forestry at Masuda, Simane, Japan;
Received February 17, 1942.)

A report has already been made by the author on the relative value of different kinds of nitrogen compounds. In this paper the results of the experiments carried on as to the relative value of NH_4-N and NO_3-N as manure for the rushes as well as the influence of the time in which the manuring was done will be presented. Ammonium sulphate and sodium nitrate were used in the experiments as

Table Results of experiments.

Lots. / Items	A [IV. 20]		B [IV. 30]		C [V. 7]		D [V. 14]		No-N.	No-manure.	Added NaCl.
	Ammo-niac.	Nitric.	Ammo-niac.	Nitric.	Ammo-niac.	Nitric.	Ammo-niac.	Nitric.			
Fresh stems (weight)	100	45	75	28	43	30	64	23	5	4	91
Air-dried stems (total)	100	46	69	28	40	30	56	23	6	4	86
(over 45 cm)	100	38	62	17	26	24	47	15	0.4	0	87
(under 45 cm)	100	80	98	78	104	60	98	59	30	20	81
Number of stems (total)	100	57	79	40	56	41	77	32	12	10	93
(over 45 cm)	100	41	62	20	29	24	51	17	0.5	0	89
(under 45 cm)	100	85	109	75	107	72	125	59	32	28	100
(over 30 cm)	100	54	69	35	49	31	63	26	7	3	87
Tillering (multiples compared to number of young plants transplanted) (over 30 cm)	13	7	9	4	6	4	8	3			11
(over 45 cm)	11	5	7	2	3	3	6	2			10
Mutual index (weight)	100	42	100	36	100	73	100	34			

nitrogen sources. The crop was manured at the rate of 36 kg. of N_2, per Tan 20 kg. of P_2O_5 per Tan and 25 kg. of K_2O per Tan.

Only a quarter part of the total nitrogen was applied each time on the following dates.

A [IV. 20] lot. (IV. 20, V. 5, V. 30 and VI. 13).
B [IV. 30] lot. (IV. 30, V. 14, VI. 9 and VI. 27).
C [V. 7] lot. (V. 7, V. 22, VI. 20 and VII. 7).
D [V. 14] lot. (V. 14, V. 30, VI. 27 and VII. 14).

Several lots of pots bearing the above dates, of no-N and no-manure as controls were set up in a greenhouse.

The condition of growth, yield and quality of the rushes were investigated. Young plants of the rush were transplanted in Wagner's pots (in sand culture) on March 17, 1938, and harvested on August 1, 1938.

All rushes in the lots of NH_4-N were observed to have grown better than those in the NO_3-N-lots. The comparative yields and other data are presented in the above table.

The ammoniac nitrogen is more effective than the nitric nitrogen for the rush plants. This crop, therefore, is regarded as an ammonium-plant.

These data also suggest that for the best growth of the rush in its quality as well as yield, the first spring manuring should always be done during the most favourable period extending from the middle to the end of April but never later.

Some Comparisons of Estimation Procedure of Lignin Bodies in Tundra.

(pp. 595～606)

By Sin-iti HONDA and Kazuo HAGIWARA.

(Institute for Chemistry, Kyoto Imp. University; Received February 14, 1942.)

Writers had compared the estimation methods of lignin bodies in Tundra, peat grown at Kabafuto, Nippon, with following three method; König's 72% H_2SO_4 method, Willstätter-Zechmeister's HCl method and Ross-Potter method. From these analytical results, writers has recommended the König's 72% H_2SO_4 method hydrolysing 48 hours under ice chest, because the simplicity and exacticity of procedure from the writers' experiences.

Some grams of lignin bodies isolated from the tundra was compared with lignin of Mizugoke, *Sphagnum,* and writers had gained a knowledge, that the lignin bodies are connected with the mother plants of tundra for the chemical analysis, i. e.. *Sphagnum* plants consist largest parts of tundra, which are difficult decomposition to peat.

On the Manufacture of Acetone and Butanol by Fermentation.

(1) A Study of the Acetone-butanol Fermentation of Sweet Potato.

(pp. 607~618)

By H. OKEDA, N. SOWA, A. WATANABE, and Y. HASHIMOTO.

(Nippon Soda Co. Ltd.; Received March 16, 1942.)

On the Acid Fermentation of Aspergillus Niger. (Part II.)

(pp. 619~624)

By Kinichirô SAKAGUCHI and Sinitirô BABA.

(Agricultural Chemical Laboratory, Tokyo Imperial University; Received March 6, 1942.)

From the fact that citric acid is easily formed from various carbon sources of $C_2 \sim C_6$ it may be assumed that the whole course of the fermentation involves two fundamental processes, one of which is the cleavage or breakdown process in which the molecules of the substrate may be divided into an intermediate product having less carbon atoms, and the other process being the combination or condensation of the cleavage products to form citric acid. The authors have intended to investigate these two fundamental processes in citric acid formation from glucose by two strains of *Asp. niger* (*Asp. niger* var No. 2 and *Asp. niger* var. No. 25) by the use of specific inhibitors for various enzyme systems. The summary of the results obtained is as follows: —

1) The rates of inhibition for citric acid or oxalic acid fermentation are shown below.

Inhibitors	For citric acid fermentation.		For oxalic acid fermentation.	
	Rates of inhibition.	Conc. of the inhibitor	Rates of inhibitions.	Conc. of the inhibitor
Monoiod acetic acid	87%	M/200	100%	M/20,000
Na-fluoride	100	M/1,000	100	M/1,000
Benzolsulfonic acid	100	M/1,000	100	3M/1,000
Na-arsenate	100	M/1,000	100	M/100
Na-arsenite	100	M/1,000	※The stimulating effect.	M/1,000
Methylene blue	150	M/10,000	⊙The stimul. eff.	M/10,000

※ The yield of oxalic acid markedly increased by about three times that of the control culture.

⊙ The yield of oxalic acid being about twice.

2) Citric acid fermentation was inhibited less effectively by benzol sulfonic acid and monoiod acetic acid than was oxalic acid fermentation, while Na-arsenate poisons the citric acid fermentation predominantly at the concentrations given above.

3) The enzyme systems of citric acid fermentation were selectively inhibited by the addition of Na-arsenite or methylene blue. At the same concentrations of these poisons the production of oxalic acid was strikingly increased.